5.8 Noise

5.8 NOISE

The purpose of this section is to evaluate noise source impacts on-site and to surrounding land uses as a result of implementation of the proposed project. This section evaluates short-term construction-related impacts, as well as future buildout conditions. Mitigation measures are also recommended to avoid or lessen the project's noise impacts. Information in this section was obtained from the *Seal Beach General Plan* (General Plan) and the *Seal Beach Municipal Code* (Municipal Code). For the purposes of mobile source noise modeling and contour distribution, traffic information contained in the *Ocean Place Residential Project Traffic Impact Analysis*, prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011(refer to Appendix 11.5, *Traffic Impact Analysis*) was used.

5.8.1 EXISTING SETTING

NOISE SCALES AND DEFINITIONS

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on Table 5.8-1, *Sound Levels and Loudness*.

Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the community noise environment.

Numerous methods have been developed to measure sound over a period of time; refer to Table 5.8-2, *Noise Descriptors*.

Table 5.8-1
Sound Levels and Loudness

dB(A)	Overall Level - Sound Pressure Level Reference: 0.0002 Microbars	Community (Outdoor)[1]	Home or Industry[1]	Loudness - Human Judgment of Different Sound Levels
130		- Military jet aircraft take-off with after-burner from aircraft carrier @ 50 ft (130)	- Oxygen torch (121)	120 dB(A) 32 times as loud
120 110	Uncomfortably loud	- Turbo-fan aircraft @ take-off power @ 200 ft (110)	- Riveting machine (110) - Rock and roll band (108-114)	110 dB(A) 16 times as loud
100		- Jet flyover @ 1000 ft (103) - Boeing 707, DC-8 @ 6080 ft before landing (106) - Bell J-2A helicopter @ 100 ft (100)		100 dB(A) 8 times as loud
90	Very loud	- Power mower (96) - Boeing 737, DC-9 @ 6080 ft before landing (97) - Motorcycle @ 25 ft (90)	- Newspaper press (97)	90 dB(A) 4 times as loud
		- Car wash @ 20 ft (89) - Prop airplane flyover @ 1000 ft (88) - Diesel truck, 40 mph @ 50 ft (84) - Diesel train, 45 mph @ 100 ft (83)	- Food blender (88) - Milling machine (85) - Garbage disposal(80)	80 dB(A) 2 times as loud
70	Moderately loud	- High urban ambient sound (80) - Passenger car, 65 mph @ 25 ft (77) - Freeway @ 50 ft from pavement edge, 10:00 a.m. (76 ±6)	- Living room music (76) - TV audio, vacuum cleaner	70 dB(A)
60		- Air conditioning unit @ 100 ft (60)	- Cash register @ 10 ft (65-70) - Electric typewriter @ 10 ft (64) - Dishwasher (rinse) @ 10 ft (60) - Conversation (60)	60 dB(A) half as loud
	Quiet	- Large transformers @ 100 ft (50)		50 dB(A) one-quarter as loud
40		- Bird calls (44) - Lower limit urban ambient sound (40)		40 dB(A) one-eighth as loud
20	Just audible	- Desert at night (dB(A) scale interrupted)		
10	Threshold of hearing			

Notes:
1 - Numbers in Parentheses are the A-Scale Weighted Sound Levels for that Noise Event

Source: City of Seal Beach, *City of Seal Beach General Plan*, Figure N-1, *Typical A-Weighted Noise Levels*, December 2003.

Table 5.8-2
Noise Descriptors

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level (L_{eq})	The sound level containing the same total energy as a time varying signal over a given time period. The L_{eq} is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level (L_{max})	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level (L_{min})	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM.
Day/Night Average (L_{dn})	The L_{dn} is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the L_{eq}. The L_{dn} is calculated by averaging the L_{eq}'s for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level (L_n)	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% (L_{01}, L_{10}, L_{50}, L_{90}, respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, dated 1979.

HEALTH EFFECTS OF NOISE

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. However, many factors influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

- Noise-Induced Hearing Loss;
- Interference with Communication;
- Effects of Noise on Sleep;
- Effects on Performance and Behavior;
- Extra-Auditory Health Effects; and
- Annoyance.

According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise.

Interference with communication has proved to be one of the most important components of noise-related annoyance. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The

consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

GROUND-BORNE VIBRATION

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. The peak particle velocity (PPV) or the root mean square (RMS) velocity is usually used to describe vibration amplitudes. PPV is defined as the maximum instantaneous peak or vibration signal, while RMS is defined as the square root of the average of the squared amplitude of the signal. PPV is typically used for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response. Typically, ground-borne vibration, generated by man-made activities, attenuates rapidly with distance from the source of vibration. Man-made vibration issues are therefore usually confined to short distances (i.e., 500 feet or less) from the source.

Both construction and operation of development projects can generate ground-borne vibration. In general, demolition of structures preceding construction generates the highest vibrations. Construction equipment such as vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible vibration during construction activities. Heavy trucks can also generate ground-borne vibrations that vary depending on vehicle type, weight, and pavement conditions.

SENSITIVE RECEPTORS

Human response to noise varies widely depending on the type of noise, time of day, and sensitivity of the receptor. The effects of noise on humans can range from temporary or permanent hearing loss to mild stress and annoyance due to such things as speech interference and sleep deprivation. Prolonged stress, regardless of the cause, is known to contribute to a variety of health disorders. Noise, or the lack thereof, is a factor in the aesthetic perception of some settings, particularly those with religious or cultural significance. Certain land uses are particularly sensitive to noise, including schools, hospitals, rest homes, long-term medical and mental care facilities, and parks and recreation areas. Residential areas are also considered noise sensitive, especially during the nighttime hours.

Existing sensitive receptors within the immediate project area include residential uses to the north (adjoining to the northwest and across Marina Drive) and east (across 1st Street), and Marina Community Park to the east of the project site (across the Marina Drive/1st Street intersection). Sensitive receptors can be seen below in Table 5.8-3, *Sensitive Receptors*.

Table 5.8-3
Sensitive Receptors

Type	Name	Distance from Project Site (feet)	Direction from Project Site
Residential	Residential Uses	73	North
		60	East
	Marina Community Park	143	East
Source: RBF Consulting field reconnaissance, August 2011, and Google Earth 2011.			

AMBIENT NOISE MEASUREMENTS

In order to quantify existing ambient noise levels in the project area, RBF Consulting conducted noise measurements on May 3, 2011; refer to Table 5.8-4, *Noise Measurements*. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the project site; refer to Exhibit 5.8-1, *Noise Measurement Locations*. Measurements were taken at each site, between 10:00 a.m. and 1:30 p.m. Meteorological conditions were clear skies, warm, with light wind speeds (0 to 5 miles per hour), and low humidity.

Table 5.8-4
Noise Measurements

Measurement Location Number	Location	Leq (dBA)	L_{min} (dBA)	L_{max} (dBA)	Peak (dBA)	Time
1	Northwestern portion of project site	50.1	36.9	63.9	87.9	10:17 a.m.
2	Residential uses to the east along Ocean Avenue near 1st Street	60.0	43.6	78.5	98.3	11:28 a.m.
3	Residential uses to the east along Central Way near 1st Street	53.0	46.2	64.9	89.9	1:05 p.m.
4	River Beach Townhomes to the north along Marina Drive	57.0	48.0	70.6	90.6	1:21 p.m.
Source: RBF Consulting, May 3, 2011.						

Noise monitoring equipment used for the ambient noise survey consisted of a Brüel & Kjær Hand-held Analyzer Type 2250 equipped with a 4189 pre-polarized microphone. The monitoring equipment complies with applicable requirements of the American National Standards Institute for Type I (precision) sound level meters. The results of the field measurements are indicated in Appendix 11.7, *Noise Data*.

NOT TO SCALE

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11/11 • JN 10-107353

ENVIRONMENTAL IMPACT REPORT
DEPARTMENT OF WATER AND POWER SPECIFIC PLAN AMENDMENT

Noise Measurement Locations

Exhibit 5.8-1

MOBILE SOURCES

In order to assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. The existing roadway noise levels in the vicinity of the project site were projected. Noise models were run using the Federal Highway Administration's Highway Noise Prediction Model (FHWA RD-77-108) together with several roadway and site parameters. These parameters determine the projected impact of vehicular traffic noise and include the roadway cross-section (such as the number of lanes), roadway width, average daily traffic (ADT), vehicle travel speed, percentages of auto and truck traffic, roadway grade, angle-of-view, and site conditions ("hard" or "soft"). The model does not account for ambient noise levels (i.e., noise from adjacent land uses) or topographical differences between the roadway and adjacent land uses. Noise projections are based on modeled vehicular traffic as derived from the project's *Traffic Impact Analysis*.

A 30- to 40-mile per hour (mph) average vehicle speed was assumed for existing conditions based on empirical observations and posted maximum speeds along the adjacent roadways. The ADT estimates were obtained from the project's *Traffic Impact Analysis*; refer to Appendix 11.5, *Traffic Impact Analysis*. Existing modeled traffic noise levels can be found in Table 5.8-5, *Existing Traffic Noise Levels*. As shown in Table 5.8-5, noise within the area from mobile noise ranges from 56.4 dBA to 68.7 dBA.

Table 5.8-5
Existing Traffic Noise Levels

Roadway Segment	Existing Conditions				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
Pacific Coast Highway					
North of 1st Street	37,345	68.7	875	277	88
South of 1st Street	35,495	68.4	831	263	83
Between Marina Drive and Main Street/Bolsa Avenue	36,835	68.6	862	273	86
South of Main Street/Bolsa Avenue	32,500	68.1	762	241	76
Bolsa Avenue					
East of Pacific Coast Highway	5,054	57.7	62	20	6
1st Street					
North of Marina Drive	3,030	57.8	71	22	7
South of Marina Drive	3,784	56.4	47	15	5
Marina Drive					
West of 1st Street	5,927	59.0	91	29	9
East of 1st Street	4,342	58.5	75	24	7

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level.

Source: Noise modeling is based upon traffic data within the *Ocean Place Residential Project Traffic Impact Analysis,* prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011.

STATIONARY NOISE SOURCES

The project area consists of residential and park uses served by a grid system of arterial and collector streets. The primary sources of stationary noise in the project vicinity are urban-related activities (e.g., parking areas, conversations, and recreational areas), and activity along the River's End Bike Trail to the west of the project site. The noise associated with these sources may represent a single-event or a continuous occurrence.

5.8.2 REGULATORY SETTING

This section summarizes the laws, ordinances, regulations, and standards that are applicable to the project. Regulatory requirements related to environmental noise are typically promulgated at the local level. However, Federal and State agencies provide standards and guidelines to the local jurisdictions.

STATE OF CALIFORNIA GUIDELINES

California Environmental Quality Act

CEQA was enacted in 1970 and requires that all known environmental effects of a project be analyzed, including environmental noise impacts. Under CEQA, a project has a potentially significant impact if the project exposes people to noise levels in excess of standards established in the local general plan or noise ordinance. Additionally, under CEQA, a project has a potentially significant impact if the project creates a substantial increase in the ambient noise levels in the project vicinity above levels existing without the project. If a project has a potentially significant impact, mitigation measures must be considered. If mitigation measures to reduce the impact to less than significant levels are not feasible due to economic, social, environmental, legal or other conditions, the most feasible mitigation measures must be considered.

California Government Code

California Government Code Section 65302 (f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services.

The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

CITY OF SEAL BEACH

Seal Beach Noise Ordinance

The City of Seal Beach has a noise ordinance that provides noise guidelines and standards for significant noise generators. Noise standards from Chapter 7.15 (*Noise*) of Title Seven: Public Peace, Morals, and Welfare of the City's Municipal Code are presented in Table 5.8-6, *City of Seal Beach Exterior Noise Standards*, and Table 5.8-7, *City of Seal Beach Interior Noise Standards.*

Section 7.15.015 Exterior Noise Standards

A. Unless otherwise specifically indicated, the following exterior noise standards shall apply to all property within a designated noise zone:

Table 5.8-6
City of Seal Beach Exterior Noise Standards

Zone	Noise Standards Noise Level	Time Period
1- Residential Properties	55 dBA	7:00 a.m. – 10:00 p.m.
	50 dBA	10:00 p.m. – 7:00 a.m.
2- Commercial Properties	65 dBA	At any time
3- Industrial, Manufacturing and Oil Properties	70 dBA	At any time

Source: Chapter 7.15 (*Noise*) Section 7.15.015(a) of the City of *Seal Beach Municipal Code*, 2010.

In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music or any combination thereof, each of the above noise levels shall be reduced by 5 db(A).

B. No person shall create any noise, or allow the creation of any noise, on property owned or occupied by such person when such noise causes the noise level to exceed the following when measured from a residential property:

1. *The exterior noise standard for a cumulative period of more than 30 minutes in any hour.*
2. *The exterior noise standard plus 5 dBA for a cumulative period of more than 15 minutes in any hour.*
3. *The exterior noise standard plus 10 dBA for a cumulative period of more than 5 minutes in any hour.*
4 *The exterior noise standard plus 15 dBA for a cumulative period of more than 1 minute in any hour.*
5. *The exterior noise standard plus 20 dBA for any period of time.*

C. In the event the ambient noise level exceeds any of the first 4 noise limit categories in paragraph B, the cumulative period applicable to such category shall be increased to reflect that ambient level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under such category shall be increased to reflect the maximum ambient noise level.

Section 7.15.020 Interior Noise Standards

A. Unless otherwise specifically indicated, the following interior noise standards shall apply to all property within a designated noise zone:

Table 5.8-7
City of Seal Beach Interior Noise Standards

Noise Zone	Noise Standards Noise Level	Time Period
1- Residential Properties	55 dBA	7:00 a.m. – 10:00 p.m.
	50 dBA	10:00 p.m. – 7:00 a.m.
Source: Chapter 7.15 (*Noise*) Section 7.15.015(a) of the City of *Seal Beach Municipal Code*, 2010.		

In the event the alleged offensive noise consists of impact noise, simple tone noise, speech, music or any combination thereof, each of the above noise levels shall be reduced by 5 db(A).

B. No person shall create any noise, or allow the creation of any noise, on property owned or occupied by such person when such noise causes the noise level to exceed the following when measured from another dwelling unit on residential property:

1. *The interior noise standard for a cumulative period of more than 5 minutes in any hour*
2. *The interior noise standard plus 5 dBA for a cumulative period of more than 1 minute in any hour*
3. *The interior noise standard plus 10 dBA for any period of time*

Section 7.15.025 Exemptions

Exemptions from the noise level standards stated above relevant to the project include:

E. Noise associated with construction, repair, remodeling or grading of real property performed in the following periods: between 7:00 a.m. and 8:00 p.m. on weekdays; between 8:00 a.m. and 8:00 p.m. on Saturday; and between 9:00 a.m. and 8:00 p.m. on Sunday or a holiday.

Seal Beach General Plan

City policies pertaining to scenic vistas and visual character are contained in the Noise Element of the General Plan. These goals, objectives, and policies include the following, among others:

Goal: A beach town should be a quiet place where one can hear the surf and the wind. Reduce the level of noise, so that it causes less human stress or health damage, is not as likely to interfere with human activities such as sleep, work, play, or thought, and allow the peaceful existence of wildlife and pets.

Objectives: The identification in quantitative, numerical terms of existing and projected noise levels, noise sources, and noise-sensitive land uses in the City of Seal Beach.

Maintain the relatively quiet areas of Seal Beach by regulating existing and potential noise sources, especially in public open space and the designated Wildlife Refuge areas.

The city shall require the construction of barriers to mitigate sound emissions where necessary and feasible to protect outdoor noise sensitive land uses.

The city shall ensure the effective enforcement of city, state and federal noise level standards by all appropriate city divisions. The city shall provide quick response to complaints and rapid abatement of noise nuisances within the scope of the city's police powers.

5.8.3 IMPACT THRESHOLDS AND SIGNIFICANCE CRITERIA

Appendix G, of the *CEQA Guidelines* contains analysis guidelines related to the assessment of noise impacts. These guidelines have been utilized as thresholds of significance for this analysis. As stated in Appendix G, a project would create a significant environmental impact if it would:

- Expose persons to, or generate, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies (refer to Impact Statement N-1);
- Expose persons to or generate excessive ground borne vibration or ground borne noise levels (refer to Impact Statement N-2);
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statements N-3 and N-4);
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (refer to Impact Statement N-1);
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the project area to excessive noise levels (refer to Section 8.0, *Effects Found Not To Be Significant*); and
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (refer to Section 8.0, *Effects Found Not To Be Significant*).

NOISE IMPACT CRITERIA

Significance of Changes in Traffic Noise Levels

An off-site traffic noise impact typically occurs when there is a discernable increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. A 5 dB change is generally recognized as a clearly discernable difference.

As traffic noise levels at sensitive uses likely approach or exceed the 65 CNEL standard, a 3.0 dB increase as a result of the project is used as the increase threshold for the project. Thus, the project would result in a significant noise impact when a permanent increase in ambient noise levels of 3.0 dB occurs upon project implementation and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

Significance of Changes in Cumulative Traffic Noise Levels

The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds the perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to the "existing" conditions. This comparison accounts for the traffic noise increase from the project generated in combination with traffic generated by projects in the cumulative projects list. The following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

- *Combined Effects*: The cumulative with project noise level ("2030 Plus Project") would cause a significant cumulative impact if a 3.0 dB increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

- *Incremental Effects*: The "2030 Plus Project" causes a 1 dBA increase in noise over the "2030 No Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded and the resulting noise level exceeds the applicable exterior standard at a noise sensitive use.

5.8.4 IMPACTS AND MITIGATION MEASURES

SHORT-TERM CONSTRUCTION NOISE IMPACTS

N-1 GRADING AND CONSTRUCTION WITHIN THE AREA COULD RESULT IN SIGNIFICANT TEMPORARY NOISE IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS.

Impact Analysis: The project would allow for the development of 48 single-family dwelling units and 6.4 acres of open space uses. The project is anticipated to begin construction in 2012 and occur over approximately three years. Construction in 2012 would consist of demolition, grading, and paving necessary for installing the proposed passive park space, the building pads, and the backbone infrastructure. It was conservatively assumed that 24 homes would be constructed in 2013 and 24 homes in 2014.

High groundborne noise levels and other miscellaneous noise levels can be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, scrapers, and other heavy-duty construction equipment. Table 5.8-8, *Maximum Noise Levels Generated by Construction Equipment,* indicates the anticipated noise levels of construction equipment. Table 5.8-8 provides a description of construction equipment noise levels. The average noise levels presented in Table 5.8-8 are based on the quantity, type, and Acoustical Use Factor for each type of equipment that is anticipated to be used.

Table 5.8-8
Maximum Noise Levels Generated by Construction Equipment

Type of Equipment	Acoustical Use Factor[1] (percent)	L_{max} at 50 Feet (dBA)
Crane	16	81
Dozer	40	82
Excavator	40	81
Generator	50	81
Grader	40	85
Other Equipment (greater than five horse power)	50	85
Paver	50	77
Roller	20	80
Tractor	40	84
Truck	40	75
Truck	40	80
Welder	40	73

Note:
1. Acoustical use factor (percent): Estimates the fraction of time each piece of construction equipment is operating at full power (i.e., its loudest condition) during a construction operation.

Source: Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054)*, dated January 2006. Refer to Appendix 11.7, *Noise Data*.

In order to estimate the "worst case" construction noise levels that may occur at an existing noise-sensitive receptor, the combined construction equipment noise levels have been calculated for the demolition, grading, trenching, paving, and building phases. The grading phase would include mostly site preparation activities with rough grading followed by fine grading. Construction equipment utilized during this phase would include graders, scrapers, excavators, dozers, and tractors. The paving phase would involve asphalt laydown activities which would utilize pavers, rollers, and other paving equipment. The building construction phase would utilize cranes, tractors, and forklifts.

Operating cycles for construction equipment used during these phases may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). These estimations of noise levels take into account the distance to the receptor, attenuation from molecular absorption and anomalous excess attenuation.

For construction noise, a "substantial" noise increase can be defined as interference with activities during the day and night. One indicator that construction noise could interfere with daytime activities would be speech interference. As the City does not have quantitative guidelines for construction noise, the following criteria is utilized in the analysis to define relative construction related noise impacts:

- *Speech Interference Criteria*. The Speech Interference Level was designed to highlight or measure the degree to which background noise interferes with speech levels. Speech spoken with slightly more vocal effort can be understood well, when the noise level is 65 dBA. A typical building can reduce noise levels by 20 dBA with the windows closed.[1] This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows would remain closed at all times. Therefore, this analysis utilizes an interior level of 65 dBA as a criterion level for determining significance for construction related activities, in the absence of an adopted specific construction noise related threshold by any of the local jurisdictions in which the proposed project is located.

The anticipated short-term construction noise levels generated during demolition, grading, paving, building, and coating activities are presented in Table 5.8-9, *Construction Average L_{eq} (dBA) Noise Levels by Receptor Distance and Construction Phase*. Construction activities would expose adjacent receptors to interior noise levels of:

- 49.2 dBA to 50.9 dBA during the demolition phase;
- 63.9 dBA to 66.9 dBA during the grading phase;
- 61.5 dBA to 63.4 dBA during paving phase;
- 62.6 dBA to 64.6 dBA during building construction phase; and
- 49.1 dBA to 51.0 dBA during the architectural coating phase.

[1] United States Department of Housing and Urban Development, *The Noise Guidebook*, undated, page 14.

Thus, construction noise associated with the proposed project would not expose surrounding sensitive receptors to noise levels in excess of the *Speech Interference Criteria* (65 dBA) during four of five stages of construction. The *Speech Interference Criteria* (65 dBA) would be exceeded by approximately 1.9 dBA during the grading phase at residential uses to the east of the project site. Municipal Code *Section 7.15.025 Exemptions*, exempts construction activities from the provisions of the Noise Ordinance provided that they take place between the hours of 7:00 a.m. and 8:00 p.m. on weekdays, between 8:00 a.m. and 8:00 p.m. on Saturdays, and between 9:00 a.m. and 8:00 p.m. on Sundays or holidays. The project would be required to comply with these limitations, and construction activities would not take place outside of the exempted times. However, Mitigation Measure N-1 would require the use of solid construction noise barriers along the eastern boundary of the project site during the grading phase only to ensure the *Speech Interference Criteria* (65 dBA) would not be exceeded.

Table 5.8-9
Construction Average L_{eq} (dBA) Noise Levels by Receptor Distance and Construction Phase

Description	Receptor Locations		Estimated Exterior Construction Noise Level[2,3]	Estimated Interior Construction Noise Level[2,3]	Speech Interference Criteria	Exceed Criteria?
	Direction	Distance[1]				
Phase 1						
Demolition	North	300	70.9 dBA	50.9 dBA	65 dBA	*No*
	East	530	69.2 dBA	49.2 dBA	65 dBA	*No*
Phase 2						
Grading	North	85	83.9 dBA	63.9 dBA	65 dBA	*No*
	East	60	86.9 dBA	66.9 dBA	65 dBA	*Yes*
Phase 3						
Paving	North	85	81.5 dBA	61.5 dBA	65 dBA	*No*
	East	68	83.4 dBA	63.4 dBA	65 dBA	*No*
Phase 4						
Building Construction	North	85	82.6 dBA	62.6 dBA	65 dBA	*No*
	East	68	84.6 dBA	64.6 dBA	65 dBA	*No*
Phase 5						
Coating	North	85	69.1 dBA	49.1 dBA	65 dBA	*No*
	East	68	71.0 dBA	51.0 dBA	65 dBA	*No*

Notes:
1. Distance is from the nearest sensitive receptor to the boundary of the project site.
2. Derived from the Federal Highway Administration, *Roadway Construction Noise Model (FHWA-HEP-05-054),* dated January 2006. Refer to Appendix 11.7, *Noise Data*.
3. A typical building can reduce noise levels by 20 dBA with the windows closed.[2] This assumes all windows and doors are closed, thereby attenuating the exterior noise levels by 20 dBA.

As previously noted, demolition, grading, and paving at the project site would occur during 2012, and the 48 single-family residential units would be constructed and painted over the following two years. The development order and occupancy order of the on-site lots is unknown at this time; therefore, it is speculative to quantify the noise impacts to any occupants of on-site units that may occur during the time of project construction. However, as stated above, the greatest construction

[2] United States Department of Housing and Urban Development, *The Noise Guidebook*, undated, page 14.

noise impacts would occur during grading and not during building construction. Further, noise associated with construction activities would be exempt provided that the activities take place during allowable daytime hours per Municipal Code *Section 7.15.025*. Implementation of Mitigation Measure N-1 would require mobile equipment to be muffled and placed such that emitted noise is directed away from sensitive noise receivers.

Construction activities would also cause increased noise along access routes to and from the site due to movement of equipment and workers. The proposed project would also require the export of 10,500 cubic yards of soil and the import of 20,500 cubic yards of soil, which would result in approximately 3,875 soil hauling trips. However, as construction would be limited to daytime hours per Municipal Code *Section 7.15.025* and the short-term nature of construction activities, noise from vehicles accessing the project site is not anticipated to be significant.

Adherence to the Municipal Code *Section 7.15.025* requirements and compliance with the recommended Mitigation Measure N-1 would reduce short-term construction noise impacts by requiring mobile equipment to be muffled and requiring best management practices for hauling activities. Construction of the proposed project is anticipated to occur over three years and sensitive receptors would not be exposed to significant construction noise levels over an extended period of time. Construction noise impacts would cease upon completion of the construction phase. Implementation of Mitigation Measure N-1 would minimize any impacts from construction noise and would ensure that impacts are reduced to a less than significant level.

Mitigation Measures:

N-1 Prior to Grading Permit issuance, the project shall demonstrate, to the satisfaction of the Seal Beach Development Services Department that the project complies with the following:

- Construction contracts specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other State required noise attenuation devices.

- The Applicant shall provide, to the satisfaction of the City of Seal Beach Development Services Department, a qualified "Noise Disturbance Coordinator." The Disturbance Coordinator shall be responsible for responding to any local complaints about construction noise. When a complaint is received, the Disturbance Coordinator shall notify the City within 24-hours of the complaint and determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and shall implement reasonable measures to resolve the complaint, as deemed acceptable by the City Development Services Department. The contact name and the telephone number for the Disturbance Coordinator shall be clearly posted on-site.

- Solid noise attenuation barriers (temporary barriers or noise curtains) with a sound transmission coefficient (STC) of at least 20 shall be used along the eastern project boundary (along 1st Street) during the construction grading phase only. Noise attenuation barriers constructed at the property lines to a height of 10 feet with an STC rating of at least 20 are capable of reducing noise levels by 7.7 dBA.

- When feasible, construction haul routes shall be designed to avoid noise sensitive uses (e.g., residences, convalescent homes, etc.).

- During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.

- Construction activities shall not take place outside of the allowable hours specified by the City's *Municipal Code Section 7.15.025* (7:00 a.m. and 8:00 p.m. on weekdays, 8:00 a.m. and 8:00 p.m. on Saturdays, and 9:00 a.m. and 8:00 p.m. on Sundays or holidays).

Level of Significance: Less Than Significant With Mitigation Incorporated.

VIBRATION IMPACTS

N-2 PROJECT IMPLEMENTATION WOULD NOT RESULT IN SIGNIFICANT VIBRATION IMPACTS TO NEARBY SENSITIVE RECEPTORS.

Impact Analysis:

Short-Term (Construction) Impacts

Project construction can generate varying degrees of groundborne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of the construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Groundborne vibrations from construction activities rarely reach levels that damage structures.

The Federal Transit Administration has published standard vibration velocities for construction equipment operations. In general, the Federal Transit Administration architectural damage criterion for continuous vibrations (i.e., 0.2 inch/second) appears to be conservative even for sustained pile driving. Pile driving levels often exceed 0.2 inch/second at distances of 50 feet, and 0.5 inch/ second at 25 feet without any apparent damage to buildings.

Construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. The typical vibration produced by construction equipment is illustrated in Table 5.8-10, *Typical Vibration Levels for Construction Equipment*.

Table 5.8-10
Typical Vibration Levels for Construction Equipment

Equipment	Approximate peak particle velocity at 25 feet (inches/second)[1]	Approximate peak particle velocity at 60 feet (inches/second)[2]	Approximate peak particle velocity at 85 feet (inches/second)[2]
Large bulldozer	0.089	0.024	0.014
Loaded trucks	0.076	0.020	0.012
Small bulldozer	0.003	0.0008	0.0005
Jackhammer	0.035	0.009	0.006
Vibratory compactor/roller	0.210	0.056	0.033

Notes:
1. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-2.
2. Calculated using the following formula:

$PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$

where: PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from Table 12-2 of the FTA *Transit Noise and Vibration Impact Assessment Guidelines*
D = the distance from the equipment to the receiver

As indicated in Table 5.8-10, based on the Federal Transit Administration data, vibration velocities from typical heavy construction equipment that would be used during project construction range from 0.003 to 0.210 inch-per-second peak particle velocity (PPV) at 25 feet from the source of activity. With regard to the proposed project, groundborne vibration would be generated primarily during site clearing and grading activities on-site and by off-site haul-truck travel facilitated by implementation of Tentative Tract Map No. 17425. The nearest sensitive land uses (residential uses) are located approximately 85 feet to the north and approximately 60 feet to the east of the project site boundaries. As demonstrated in Table 5.8-10, the anticipated vibration levels at these distances would not exceed the 0.2 inch-per-second PPV significance threshold during construction operations occurring along the project's eastern boundary. It should be noted that 0.2 inch-per-second PPV is a conservative threshold, as that is the construction vibration damage criteria for non-engineered timber and masonry buildings.[3] Buildings within the project area would be better represented by the 0.5 inch-per-second PPV significance threshold (construction vibration damage criteria for a reinforced concrete, steel or timber buildings).[4] Therefore, vibration impacts associated with construction are anticipated to be less than significant and no mitigation measures are required.

Long-Term (Operational) Impacts

The project is not located within the vicinity of any railroad tracks, or any other use capable of producing groundborne vibration. Additionally, as the project would allow the development of only 48 residential units and open space uses, the project would not result in any operational groundborne vibration impacts. No impact would occur in this regard.

[3] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006. Table 12-3.
[4] Ibid.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (MOBILE) NOISE IMPACTS

N-3 TRAFFIC GENERATED BY THE PROPOSED PROJECT WOULD NOT SIGNIFICANTLY CONTRIBUTE TO EXISTING TRAFFIC NOISE IN THE AREA OR EXCEED THE CITY'S ESTABLISHED STANDARDS.

Impact Analysis:

Off-Site Noise Conditions

Existing Traffic Noise

The following analysis compares the "Existing" condition to the "Existing Plus Project" condition. There are often circumstances in which an "Existing Plus Project" analysis would result in only a hypothetical comparison of impacts which would not occur. There may, for example, be circumstances in which a project is not expected to become operational for several years. During the period after the environmental analysis is prepared, and before the project becomes operational, there may be reason to believe that traffic conditions would change due to regional or area wide growth, or planned and funded traffic improvements, to name a few. In those instances, there may be reason to believe that an "Existing Plus Project" analysis would be less accurate than an analysis that takes into account the reasonably foreseeable interim changes in the environment, versus assuming static environmental conditions.

According to the *Traffic Impact Analysis*, the proposed project would generate 529 daily vehicle trips; refer to Appendix 11.5, *Traffic Impact Analysis*. Traffic volumes were analyzed under the "Existing" and "Existing Plus Project" conditions. Table 5.8-11, *Existing Noise Scenarios*, depicts the Existing noise scenario and the "Existing Plus Project" scenario. As indicated in Table 5.8-11 under the "Existing" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 56.4 dBA to 68.7 dBA. The highest noise levels under "Existing" conditions would occur along Pacific Coast Highway, north of 1st Street. Under the "Existing Plus Project" scenario noise levels at a distance of 100 feet from the centerline would range from approximately 56.8 dBA to 68.7 dBA. Table 5.8-11 also compares the "Existing" scenario to the "Existing Plus Project" scenario. The proposed project would increase noise levels on the surrounding roadways by a maximum of 0.6 dBA along Marina Drive, west of 1st Street. Therefore, noise levels resulting from the proposed project would be less than significant.

Forecast 2015 Traffic Noise

The "2015 No Project" and "2015 Plus Project" were compared for long-term conditions. In Table 5.8-12, *Forecast 2015 Noise Scenarios*, the noise level (dBA at 100 feet from centerline) depicts what would typically be heard 100 feet perpendicular to the roadway centerline. As indicated in Table 5.8-12 under the "2015 No Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 56.5 dBA to 69.0 dBA. The highest noise levels under "2015 No Project" conditions would occur along Pacific Coast Highway, north of 1st Street. Under the "2015 Plus Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 56.9 dBA to 69.0 dBA. The highest noise levels occurring under these conditions would occur along Pacific Coast Highway, north of 1st Street. Table 5.8-12 also compares the "2015 No Project" scenario to the "2015 Plus Project" scenario. The proposed project would increase noise levels on the surrounding roadways by a maximum of 0.5 dBA along 1st Street, north and south of Marina Drive, with baseline noise levels less than 60 dBA. Therefore, noise levels resulting from the proposed project would be less than significant.

Forecast 2030 Traffic Noise

The "2030 No Project" and "2030 Plus Project" were compared for long-term conditions. In Table 5.8-13, *Forecast 2030 Noise Scenarios*, the noise level (dBA at 100 feet from centerline) depicts what would typically be heard 100 feet perpendicular to the roadway centerline. As indicated in Table 5.8-13 under the "2030 No Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 57.1 dBA to 69.6 dBA. The highest noise levels under "2030 No Project" conditions would occur along Pacific Coast Highway, north of 1st Street. Under the "2030 Plus Project" scenario, noise levels at a distance of 100 feet from the centerline would range from approximately 57.5 dBA to 69.6 dBA. The highest noise levels occurring under these conditions would occur along Pacific Coast Highway, north of 1st Street. Table 5.8-13 also compares the "2030 No Project" scenario to the "2030 Plus Project" scenario. The proposed project would increase noise levels on the surrounding roadways by a maximum of 0.4 dBA along 1st Street, north and south of Marina Drive, with baseline noise levels less than 60 dBA. Therefore, noise levels resulting from the proposed project would be less than significant.

Table 5.8-11
Existing Noise Scenarios

Roadway Segment	Existing					Existing Plus Project					Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)				
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour		
Pacific Coast Highway												
North of 1st Street	37,345	68.7	875	277	88	37,654	68.7	881	279	88	0	*No*
South of 1st Street	35,495	68.4	831	263	83	35,551	68.4	833	263	83	0	*No*
Between Marina Drive and Main Street/Bolsa Avenue	36,835	68.6	862	273	86	37,004	68.6	866	274	87	0	*No*
South of Main Street/Bolsa Avenue	32,500	68.1	762	241	76	32,626	68.1	764	242	76	0	*No*
Bolsa Avenue												
East of Pacific Coast Highway	5,054	57.7	62	20	6	5,096	57.7	63	20	6	0	*No*
1st Street												
North of Marina Drive	3,030	57.8	71	22	7	3,395	58.3	80	25	8	0.5	*No*
South of Marina Drive	3,784	56.4	47	15	5	4,200	56.8	52	16	5	0.4	*No*
Marina Drive												
West of 1st Street	5,927	59.0	91	29	9	6,117	59.6	105	33	11	0.6	*No*
East of 1st Street	4,342	58.5	75	24	7	4,454	58.6	77	24	8	0.1	*No*

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Ocean Place Residential Project Traffic Impact Analysis,* prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011.

Table 5.8-12
Forecast 2015 Noise Scenarios

Roadway Segment	2015 No Project					2015 Plus Project					Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)				
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour		
Pacific Coast Highway												
North of 1st Street	40,110	69.0	940	297	94	40,419	69.0	946	299	95	0	*No*
South of 1st Street	38,201	68.7	895	283	89	38,257	68.8	897	284	90	0.1	*No*
Between Marina Drive and Main Street/Bolsa Avenue	39,813	68.9	933	295	93	39,982	68.9	937	296	94	0	*No*
South of Main Street/Bolsa Avenue	35,176	68.4	824	261	82	35,302	68.4	828	262	83	0	*No*
Bolsa Avenue												
East of Pacific Coast Highway	5,366	58.0	66	21	7	5,408	58.0	67	21	7	0	*No*
1st Street												
North of Marina Drive	3,181	58.0	74	24	7	3,546	58.5	83	26	8	0.5	*No*
South of Marina Drive	3,943	56.5	49	15	5	4,359	57.0	54	17	5	0.5	*No*
Marina Drive												
West of 1st Street	6,192	59.7	107	34	11	6,382	59.8	110	35	11	0.1	*No*
East of 1st Street	4,619	58.8	80	25	8	4,731	58.9	82	26	8	0.1	*No*

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Ocean Place Residential Project Traffic Impact Analysis,* prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011.

Table 5.8-13
Forecast 2030 Noise Scenarios

Roadway Segment	2030 No Project					2030 Plus Project					Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact?
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)			ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet)				
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour		
Pacific Coast Highway												
North of 1st Street	45,712	69.6	1,072	339	107	46,021	69.6	1,079	341	108	0	*No*
South of 1st Street	43,525	69.3	1,020	323	102	43,581	69.3	1,023	323	102	0	*No*
Between Marina Drive and Main Street/Bolsa Avenue	45,339	69.5	1,063	336	106	45,508	69.5	1,066	337	107	0	*No*
South of Main Street/Bolsa Avenue	40,051	69.0	938	297	94	40,177	69.0	942	298	94	0	*No*
Bolsa Avenue												
East of Pacific Coast Highway	6,124	58.5	76	24	8	6,166	58.6	76	24	8	0.1	*No*
1st Street												
North of Marina Drive	3,636	58.6	85	27	8	4,001	59.0	94	30	9	0.4	*No*
South of Marina Drive	4,511	57.1	56	18	6	4,927	57.5	61	19	6	0.4	*No*
Marina Drive												
West of 1st Street	7,081	60.3	122	39	12	7,271	60.4	125	40	13	0.1	*No*
East of 1st Street	5,270	59.4	91	29	9	5,382	59.4	93	29	9	0	*No*

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Ocean Place Residential Project Traffic Impact Analysis,* prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011.

On-Site Noise Conditions

As buildout of the project would result in 48 single-family residential units, on-site noise conditions were modeled. The Federal Highway Administration (FHWA) TNM 2.5 model was used to evaluate the 2030 Plus Project traffic noise for future on-site noise conditions. The future project conditions were modeled at a total of 11 receptor locations. The receptor locations are located within the residential lots that are situated along Marina Drive and 1st Street. Table 5.8-14, *On-Site Noise Levels*, illustrates the anticipated noise levels at each on-site sensitive receptor.

As indicated in Table 5.8-14, on-site noise levels would not exceed 60 dBA. Therefore, noise levels would be consistent with the normally acceptable noise levels of 60 dBA at exterior living areas for residential uses, as specified on General Plan Figure N-3, *Noise/Land Use Compatibility Guidelines*. Additionally, standard building construction practices typically result in approximately 20 dBA of noise attenuation with windows closed, which would result in interior noise levels below 40 dBA. Therefore, operational noise impacts would be less than significant and no additional mitigation is required.

Table 5.8-14
On-Site Noise Levels

TNM Model Location Number	Tentative Tract Map No. 17425 Lot Number	Exterior Noise Level[1] (dBA CNEL)	Interior Noise Level[2] (dBA CNEL)
1	48	54.4	34.4
2	6	58.9	38.9
3	7	58.0	38.0
4	8	58.5	38.5
5	9	58.7	38.7
6	10	59.0	39.0
7	11	59.1	39.1
8	12	59.1	39.1
9	13	59.2	39.2
10	24	58.2	38.2
11	25	57.8	37.8

Notes:
1. It should be noted that the TNM 2.5 model has a tolerance standard deviation of +/-0.5 dBA.
2. A 20 dBA noise attenuation rate was utilized to determine the interior noise standards.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (STATIONARY) NOISE IMPACTS

N-4 THE PROPOSED PROJECT WOULD NOT RESULT IN A SIGNIFICANT INCREASE IN LONG-TERM STATIONARY AMBIENT NOISE LEVELS.

Impact Analysis: The proposed project would allow for the development of 48 single-family lots and 6.4 acres of open space. The proposed Tentative Tract Map No. 17425 would allow the development of 48 single-family units on the project site. Noise associated with operational activities of these uses is typically generated by children playing, pets, amplified music, mechanical equipment, car repair, and home repair. Noise from residential stationary sources would be typical of surrounding residential uses in the project area and would primarily occur during the "daytime" activity hours. Noise impacts to surrounding uses from residential uses associated with future development that would occur under the proposed project are anticipated to be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

5.8.5 CUMULATIVE IMPACTS

The basis for cumulative analysis is presented in Section 4.0, *Basis of Cumulative Analysis*. Cumulative projects identified as having the potential to interact with the proposed project to the extent that a significant cumulative effect could occur include the:

- Fresh 'n Easy Project;
- Marina Park Development;
- River's End Staging Area and San Gabriel River Bikeway Enhancement Plan; and
- 2nd Street and Pacific Coast Highway Project.

The following discussions are included per topic area to determine whether a significant cumulative effect would occur.

SHORT-TERM CONSTRUCTION NOISE IMPACTS

■ GRADING AND CONSTRUCTION WITHIN THE AREA COULD RESULT IN SIGNIFICANT SHORT-TERM NOISE IMPACTS TO NEARBY NOISE SENSITIVE RECEIVERS, FOLLOWING IMPLEMENTATION OF MITIGATION MEASURES.

Impact Analysis: The Marina Park Development would be the only project that would cumulatively contribute to short-term noise impacts in the area due to the proximity to the project site and the type of development. The Marina Park Development is anticipated to begin construction in 2014 at the earliest. The proposed project anticipates that 24 homes would be constructed and painted in 2014. Therefore, construction activities would likely overlap by one year in a worst case scenario. Construction activities within the overlapping year could result in excessive noise impacts to surrounding residential uses. However, as stated above, the proposed project would comply with the City's Municipal Code's limitations on allowable hours of construction and would implement Mitigation Measure N-1 to reduce construction noise impacts to less than significant

levels. The Marina Park Development construction activities would also be required to comply with the City's Municipal Code's limitations on allowable hours of construction and would also be exempt from the noise standards of the Municipal Code. Additionally, the Marina Park Development project would be required to implement any other required mitigation measures that may be prescribed pursuant to CEQA provisions. Therefore, the project's contribution to cumulative noise impacts would be less than significant.

Mitigation Measures: Refer to Mitigation Measure N-1.

Level of Significance: Less Than Significant With Mitigation Incorporated.

VIBRATION IMPACTS

- **PROJECT IMPLEMENTATION WOULD NOT RESULT IN SIGNIFICANT VIBRATION IMPACTS TO NEARBY SENSITIVE RECEPTORS.**

Impact Analysis: As stated above, the Marina Park Development project's construction activities may overlap with the construction of 24 single-family homes on the project site. Due to the anticipated year of overlap (2014), grading and site preparation (typically the initial construction phases which produce groundborne vibration) of the Marina Park Development project would overlap with the building construction and painting of 24 homes at the project site. Because of the types of construction equipment utilized during building construction and painting, groundborne vibration generated at the project site during 2014 would be nominal. There would be no vibration impacts associated with operations at the project site or the Marina Park Development site. Therefore, vibration impacts of the proposed project would not be cumulatively considerable. Further, the Marina Park Development project would be required to implement any required mitigation measures that may be prescribed pursuant to CEQA provisions. Therefore, the project's contribution to cumulative vibration impacts would be less than significant.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

LONG-TERM (MOBILE) NOISE IMPACTS

- **TRAFFIC GENERATED BY THE PROPOSED PROJECT WOULD NOT SIGNIFICANTLY CONTRIBUTE TO EXISTING TRAFFIC NOISE IN THE AREA OR EXCEED THE CITY'S ESTABLISHED STANDARDS.**

Impact Analysis: The cumulative mobile noise analysis is conducted in a two step process. First, the combined effects from both the proposed project and other projects are compared. Second, for combined effects that are determined to be cumulatively significant, the project's incremental effects then are analyzed. The project's contribution to a cumulative traffic noise increase would be considered significant when the combined effect exceeds perception level (i.e., auditory level increase) threshold. The combined effect compares the "cumulative with project" condition to "existing" conditions. This comparison accounts for the traffic noise increase from the project generated in combination with traffic generated by projects in the cumulative projects list. The

following criteria have been utilized to evaluate the combined effect of the cumulative noise increase.

Combined Effects. The cumulative with project noise level ("2030 Plus Project") would cause a significant cumulative impact if a 3.0 dB increase over existing conditions occurs and the resulting noise level exceeds the applicable exterior standard at a sensitive use.

Although there may be a significant noise increase due to the proposed project in combination with other related projects (combined effects), it must also be demonstrated that the project has an incremental effect. In other words, a significant portion of the noise increase must be due to the proposed project. The following criteria have been utilized to evaluate the incremental effect of the cumulative noise increase.

Incremental Effects. The "2030 Plus Project" causes a 1 dBA increase in noise over the "2030 No Project" noise level.

A significant impact would result only if both the combined and incremental effects criteria have been exceeded. Noise by definition is a localized phenomenon, and drastically reduces as distance from the source increases. Consequently, only proposed projects and growth due to occur in the general vicinity of the project site would contribute to cumulative noise impacts. Table 5.8-15, *Cumulative Noise Scenario*, lists the traffic noise effects along roadway segments in the project vicinity for "Existing", "2030 No Project", and "2030 Plus Project", including incremental and net cumulative impacts.

First, it must be determined whether the 2030 Plus Project Increase Above Existing Conditions (*Combined Effects*) is exceeded. Per Table 5.8-15, this criteria is not exceeded along any of the segments. Next, under the *Incremental Effects* criteria, cumulative noise impacts are defined by determining if the forecast ambient (2030 No Project) noise level is increased by 1 dB or more. Based on the results of Table 5.8-15, there would not be any roadway segments that would result in significant impacts, as they would not exceed either the combined or the incremental effects criteria. The proposed project would not result in long-term mobile noise impacts based on project generated traffic as well as cumulative and incremental noise levels. Therefore, the proposed project, in combination with cumulative background traffic noise levels, would result in a less than significant cumulative impact in this regard.

Mitigation Measures: No mitigation measures are required.

Level of Significance: Less Than Significant Impact.

Table 5.8-15
Cumulative Noise Scenario

Roadway Segment	Existing	2030 No Project	2030 Plus Project	Combined Effects	Incremental Effects	Cumulatively Significant Impact?
	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	dBA @ 100 Feet from Roadway Centerline	Difference in dBA Between Existing and 2030 Plus Project	Difference in dBA Between 2030 No Project and 2030 Plus Project	
Pacific Coast Highway						
North of 1st Street	68.7	69.6	69.6	0.9	0	No
South of 1st Street	68.4	69.3	69.3	0.9	0	No
Between Marina Drive and Main Street/Bolsa Avenue	68.6	69.5	69.5	0.9	0	No
South of Main Street/Bolsa Avenue	68.1	69.0	69.0	0.9	0	No
Bolsa Avenue						
East of Pacific Coast Highway	57.7	58.5	58.6	0.9	0.1	No
1st Street						
North of Marina Drive	57.8	58.6	59.0	1.2	0.4	No
South of Marina Drive	56.4	57.1	57.5	1.1	0.4	No
Marina Drive						
West of 1st Street	59.0	60.3	60.4	1.4	0.1	No
East of 1st Street	58.5	59.4	59.4	0.9	0	No

Notes: ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level

Source: Noise modeling is based upon traffic data within the *Ocean Place Residential Project Traffic Impact Analysis,* prepared by Linscott, Law & Greenspan Engineers, dated October 27, 2011.

LONG-TERM (STATIONARY) NOISE IMPACTS

- **THE PROPOSED PROJECT WOULD NOT RESULT IN A SIGNIFICANT INCREASE IN LONG-TERM STATIONARY AMBIENT NOISE LEVELS.**

Although the three related cumulative projects have been identified within the project study area, the noise generated by stationary equipment on-site cannot be quantified due to the speculative nature of conceptual nature of each development. However, each cumulative project would require separate discretionary approval and CEQA assessment, which would address potential noise impacts and identify necessary attenuation measures, where appropriate. Additionally, as noise dissipates as it travels away from its source, noise impacts from stationary sources would be limited to each of the respective sites and their vicinities. The nearest related project to the project site would be the Marina Park Development (adjacent to the northeast). Noise associated with park uses typically include children playing and conversation, which would occur during daytime hours only and are not typically significant noise sources.

As noted above, the proposed project would not result in significant stationary noise impacts. The proposed project would not result in stationary long-term equipment that would significantly affect surrounding sensitive receptors. Thus, the proposed project and identified cumulative projects are not anticipated to result in a significant cumulative impact.

5.8.6 SIGNIFICANT UNAVOIDABLE IMPACTS

No unavoidable significant impacts related to noise impacts have been identified in this section.